Chemeca 2025 and Hazards Australasia
28 – 30 September, Adelaide, South Australia

Unlocking Potential CO2 Monetization Through Acid Gases Recovery From AGRU

Mohd Firdaus Sabturani

PETRONAS

firdaus_sabturani@petronas.com

ABSTRACT

CO_2 removal from feedgas in the gas processing plant is necessary to prevent dry ice formation in the downstream low temperature section of the plant. Upon acid gases removal in Acid Gas Removal Unit (AGRU), the acid gases which primarily contain CO_2 will be sent to Acid Gas Oxidizer (AGO) for complete combustion of hydrocarbons, H_2S and other gases. An opportunity to monetize the CO_2 was identified by recovering the acid gases from AGRU and sending them to potential customers as feedstock for their CO_2 purification plants to produce high purity CO_2. This opportunity represents both commercial and environmental benefits in terms of monetization of CO_2 in acid gases and reduction of CO_2 footprint for the gas processing plant. Additionally, recovering the acid gases will reduce fuel gas consumption in AGO, leading to OPEX optimization. A feasibility study was conducted to identify potential modifications required at the existing plant to accommodate the new project. This paper intends to share the key design considerations taken when evaluating the project's feasibility. The first consideration is the recovered acid gases quality and flowrate from AGRU which shall always meet the minimum required feedstock specifications to the external CO_2 purification plants. Proper characterization of the acid gases quality and comprehensive analysis of the acid gases flowrate from AGRU are essential exercises in the feasibility study. Another important consideration is the fact that the existing gas processing plant is comprised of multiple trains. Hence, the new facility shall be designed to ensure supply redundancy to the customers in the event of planned or unplanned shutdown of any train. The selection of tie-in locations for the recovered acid gases from AGRU in the existing plant is another key design consideration. Selecting the locations to be as close as possible to the customer's battery limit should maximize the supply pressure to customer at the designated delivery point. The selection shall also consider the impact to existing operation, such as the need to shut down the existing gas processing train to construct the new tie-ins or piping. Constraints such as on-site space availability, constructability and suitable pipe routing from the tie-ins to the customer's battery limit shall be comprehensively assessed in the feasibility study. The new piping shall be appropriately sized and designed to have the least pressure drop to maximize supply pressure

to customers.

KEY WORDS

Acid Gas Removal Unit, CO_2 Monetization, Acid Gases Recovery, Sustainability

BIOGRAPHY

A Process Engineer with more than 17 years of experience in process design, engineering and troubleshooting, process and energy optimization, process and utility simulations, feasibility studies, project management, capital project execution (engineering, construction, commissioning and start-up), and plant turnaround. Currently acting as a Technical Professional (Principal Engineer) in PETRONAS Group Technical Solutions and responsible for the technical leadership in the area of expertise and provision of consultancy services and technical solutions to PETRONAS OPUs groupwide. Previously worked in PETRONAS LNG Complex in Bintulu as Staff Engineer (Gas Treating), looking into the front-end section of MLNG SATU and DUA.

CONFERENCE PROGRAM

Please indicate which conference program your abstract relates to:

☐ Hazards Australasia

☒ Chemeca